

Description of two new species of TERMITES from Texas.

BY S. B. BUCKLEY.

TERMES (EUTERMES) CINEREUS n. sp.— Abdomen and upper surface of the thorax cinereus with lighter and darker shades; head of the *nasuti* brownish-black and of the *worker* yellowish-brown; antennæ light brown, legs and the under surface of the head and thorax pale yellow.

Worker. Head oval, anteriorly slightly narrowed, with a circular and somewhat convex elevation in front; epistoma a little convex, sloping towards the front edge which is semicircular; vertex depressed, somewhat smooth; occiput rounded and projecting over the prothorax; antennæ 15-jointed, hairy, clavate, shorter than the head, first joint cylindrical and longer than the second, third still shorter and the remainder about the length of the second, being shaped like truncated cones with their bases forward, apical joints egg-shaped; eyes a little convex, large, brownish-black and placed on the front sides above and anterior to the base of the antennæ; mandibles not projecting beyond the epistoma, dark brown, somewhat triangular, a little curved at the apex, at and near which are two strong teeth, a third small tooth is near the middle of the inner margin, outer margin curved, under surface of the head flat with a slight sinus extending from the mentum backwards, mentum emarginate in front, ligula four parted, the two inner segments nearly double the size of the two outer, all obtuse, with a few scattering hairs, palpi clavate, geniculate, trochanter, femur and tibia smooth, tarsi clothed with rigid hairs; prothorax semicircular and raised above the meso- and metathorax and narrower than either the head or abdomen, mesothorax longer than the prothorax, semicircular; abdomen egg-shaped, proportionably large, somewhat flat above, under surface and near the anus hairy; appendices abdominal and anal wanting. Length 0.14, head 0.04, abdomen 0.07 inch.

Nasuti. Antennæ 9-jointed, basal joint twice the length of the second, remaining joints nearly equal, egg-shaped and slightly hairy; head smooth, somewhat pyriform, constricted a little in front of the middle, backhead rounded and projecting backwards over the thorax; fronthed. anterior to the constriction, nearly one half smaller than the portion back of it, and raised around the middle, sloping gradually front and backwards; the upper anterior portion prolonged into a snout. below the base of which the front is compressed at the sides about one-third of the distance back to-

wards the strangulation; the front edge has a small tooth or projection near its centre, above and below which the margin is curved inwards, the upper curve projecting slightly over the lower; snout nearly cylindrical, being a little smaller near the middle and rather abruptly pointed; eyes small, convex, placed above the base of the antennæ near the anterior margin of the head; thorax, abdomen and legs similar to those of the worker. Size, $\frac{1}{3}$ -- $\frac{1}{4}$ smaller than the worker, the snout being about $\frac{1}{3}$ of the entire length of the head.

It was about sunset on the 22nd of October 1860, when I first saw this species, in San Saba County, Texas, in a field where both worker and nasuti were carrying home seeds of grasses and weeds. They marched in dense columns along pathways leading to a hole near the base of a stump, into which they entered. Others were marching outward in search of provendor. The nasuti are about one-fourth to one-fifth of the entire community. They dwell in the ground where they have rooms, seldom more than one to two inches long, connected by tunnels. They march with heads erect and thrown backwards over the thorax, carrying their loads with their mandibles.

Subsequently, while engaged in the Geological Survey of that and the adjoining Counties, I met them frequently. After rains—which are of rare occurrence in that climate—they make semicylindrical tubes which lie on the surface of the ground to the length of from three to six inches. These arched ways sometimes intersect each other, being connected with chambers below. They rarely work by day above the surface, and never in the bright sunshine. In June 1861, in Llano County, I saw them carrying home dry segments of post-oak leaves of the preceding years growth. Here again the nasuti worked in common with the rest of the tribe. They must have preferred these dry leaves, because green leaves and grass were abundant on every side. They are all quite active, moving faster than any species of Termites which I have seen.

What is the use of the snout of the nasuti? It may be used to excavate dirt, but does not seem to be well adapted for battle as it is not of sufficient sharpness to penetrate other insects easily, nor does the size of the nasuti indicate that they were made for soldiers, but it is probable that both forms unite for the defence of the whole tribe, and likewise labour in common for its support.

TERMES TUBIFORMANS n. sp.— Head and thorax pale yellow; legs white; abdomen above dirty white with lighter and darker shades, its sides

and under surface yellowish-white; mouth, the apices and inner edges of the mandibles light brown; antennæ pale yellow.

Worker. Head oval somewhat egg-shaped in outline seen from above, narrowing in front, convex and smooth above, slightly hairy posteriorly, somewhat depressed, rounded and projecting a little over the thorax; front raised, the back portion of the elevation triangular and depressed; epistoma rounded above and protruding slightly in front, eyes large, convex, brownish-black, placed in front midway between the lower side and the top near the base of the antennæ; antennæ clavate, 13-jointed, hairy, first and second joint longer than the third, succeeding joints nearly equal, under surface of the head has a sinus extending back from the mentum, labial palpi small, clavate, maxillary palpi geniculate, clavate, the apical joint longest, mandibles 3-toothed, two sharp teeth at the point with a furrow between their bases, caused by the extension of the teeth into elevations on the mandibles, the other tooth near the middle, short, with a broad base affording a long cutting surface, outer edge of the mandible curved; thorax slightly hairy, semicircular, narrower than either the head or abdomen; trochanters and femurs smooth with a very few scattering hairs, lower part of the tibia and all of the tarsi hairy, claws light brown; abdomen egg-shaped, slightly compressed above and below, smooth, sparsely hairy.

Length 0.16, head 0.04, 0.08 inch.

Soldier. Antennæ 11-jointed, first joint longest, the next a little shorter and the third still shorter, remaining joints nearly equal and somewhat egg-shaped, mandibles smooth, sharp pointed and crossing near their apices, light brown about one-third of their length near the base, the remainder dark brown, a small tooth about midway on the inner margin; head oval, smooth above, a little hairy in front, rounded back and extending slightly over the thorax, the under surface has a deep sinus posteriorly; there are two light brown spots (eyes?) in front, one just above the base of each antenna; thorax, abdomen and legs similar to those of the worker. Length 0.14, head including mandibles 0.08, mandibles 0.04.

Female? Head above pale yellow, beneath, thorax, margins and sides of the abdomen and legs white, the remainder of the abdomen ash-colored or a dirty white, mouth and mandibles light brown, mandibles triangular, 3-toothed, teeth smaller and sharper than those of the worker, ocelli near the middle of the sides of the head, eyes in front above and anterior to the base of the antennæ; front prominent, raised and slightly hairy; posterior part of the head rather flat at top, rounded backwards but not projecting over the thorax, smooth; thorax subcylindrical, upper side covered

with rudimentary wings, enlarged backwards into the abdomen; legs short; abdomen oblong, smooth, segments nine, largely furrowed or wrinkled; posteriorly rounded and obtuse.

These females (?) were quite numerous (one-eighth to one-tenth of the whole community) in a large nest on the top of a hill in the northern part of San Saba County, late in the autumn of 1860. Again the following spring, I found them with the wings little if any enlarged; they crept rather slowly, endeavouring to escape into the inner recesses of the den. In these nests I also found forms evidently in a growing state, head rudimentary or none, legs none, anterior portion small and rather pointed; abdominal or posterior part large and obtuse.

Lampasas, San Saba and the adjoining counties, Texas.

This species often has clay tubes four to six inches high above the surface of the ground, interlacing and crossing each other at various angles, and generally attached to grass or bushes; these tubes are very thin and from one-third to one-half an inch in diameter; beneath these cylinders they also have cells in the ground. At other times where the ground is very dry, hard and unsuited to form tubes, they construct an irregular clay mass three to four inches high, which is filled with winding passages. Again I have found them beneath rocks on hill tops, in cells from which there were holes leading to other cells below. In overturning rocks to find ants, it sometimes happened that both ants and termites would have their nests under the same rock; then the ants on discovering the termites would invariably seize them and drag or endeavor to drag them away, nor would the termites make any resistance. At first I thought it strange that the ants—which are very numerous in that section—did not exterminate the termites which are also very common. I have often caught ants and placed them at the entrance of a termites' den, especially these tube-makers, but the ants on seeing the termites on guard, would always run away, and in one instance when I thrust an ant within the door, the termites seized it and dragged it back within.

TERMES FLAVIPES Kollar, is the most abundant species of the genus in Texas. Specimens from that locality are similar to those obtained in the vicinity of Philadelphia.